

Purpose and Scope

This report provides hydrologic and water-quality data collected from (1) three agricultural drainage canals in Hyde County, (2) two agricultural drainage canals in Beaufort County, and (3) Campbell Creek, North Carolina (fig. 1). Descriptions of the study sites and data-collection procedures are followed by data tables and graphs.

Hydrologic and water-quality data are presented for the period of October 1990 through May 1992 when the tide gates and flashboard risers were in operation. Hydrologic data include precipitation, water-level, and stream-velocity data recorded at 15-minute intervals. Water-quality data include physical properties measured in the field and nutrient and sediment concentrations measured biweekly and for selected storm events. Specific conductance and water temperature were measured at regular intervals for the agricultural basins and daily at Campbell Creek sites. Specific-conductance values at the Campbell Creek sites were converted to salinity values.

Acknowledgments

The author gratefully acknowledges the cooperation of the landowners who permitted the study sites to be located on their property. The landowners provided free and open access to the property, farming-practice data, and valuable assistance throughout the investigation. Cooperating landowners are: Mr. Sydney Credle, Mr. Charlie Godley, Mr. David O'Neal, Mr. Hiram Paul, and Mr. Kelly Williams. Mr. David O'Neal was particularly instrumental in identifying Hyde County sites and in maintaining local support for the investigation. Mr. Rufus Croom, Mr. James T. Etheridge, Mr. Michael W. Harriett, and Mr. Rodney Woolard, of the U.S. Soil Conservation Service, assisted in identifying sites, developing and maintaining local contacts, and providing technical guidance. The Hyde County Soil and Water Conservation District was also responsible for blocking a ditch to hydraulically separate two of the basins. Mr. James R. Cummings and Ms. Patricia Hooper (North Carolina Division of Soil and Water Conservation), Ms. Elizabeth McGee and Mr. Jimmie R. Overton (North Carolina Division of Environmental Management), and Mr. Thomas W. Ellis (North Carolina Department of Agriculture) were instrumental in initiating and developing continuing support for the investigation. This study was begun in cooperation with the Albemarle-Pamlico Estuarine Study of the North Carolina Department of Environment, Health, and Natural Resources and has continued in cooperation with the Department's Division of Environmental Management.

STUDY BASINS AND DATA-COLLECTION SITES

The Hyde and Beaufort County study basins, including Campbell Creek, are described in this section. The study basins lie in the Coastal Plain Province of North Carolina near the mouth of the Pamlico River (fig. 1). The Pamlico River is a drowned river-valley estuary characterized by daily mean water-level fluctuations of less than a foot and salinities from near zero to about 20 ppt (parts per thousand) (Bales, 1990). Because of the proximity of the basins to the Pamlico River and Pamlico Sound, and because the bottom of the canal that drains each basin is near or below mean sea level, water level and water quality in the canals are often affected by downstream estuarine conditions.